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ABSTRACT

This report summarizes the results of an international survey on the utilization of videotex and teletext which covered 20 countries, including Canada, Great Britain, France, Holland, Switzerland, the United States, and West Germany. Included are: (1) definitions and a comparison of the two media; (2) the methods used to collect the data (interviews, document studies, and literature searches); (3) secondary literature sources on videotex and teletext, including three computerized data bases--ERIC, Computerindex, and Pascal; (4) international composition and noneducational emphasis of two videotex conferences; (5) general and educational applications of videotex and teletext in Canada, including specific data on government, academic, and private institutions' involvement with the two media; and (6) a summary of international data, including a world total. Effective educational uses for videotex and teletext are briefly discussed and suggestions are made for more educational utilization of these media. Acknowledgements and a list of 27 references complete the paper. (JB)

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VIDEOTEX AND TELETEXT: TEACHING AND LEARNING AN INTERNATIONAL SURVEY

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The Context Of This Research

The research on which I am reporting is an off-shoot of my principal current research project: A Technological History of the Beginnings of Videotex and Teletext. Part of my teaching at Ryerson Polytechnical Institute in Toronto is in the Instructional Media Program. As a result I am always interested in technological innovations which appear to have instructional applications - I include here videotex and teletext. In addition to these two streams of interest, there is a third: I was the first Director of a Telidon (1) Public Initiatives Program Project in which Ryerson's Nutrition Information Service produced a Food and Nutrition Information Directory which became part of the data bare for the Bell Canada - Infomart "Vista" field trial of Telidon in Toronto and Cap Rouge, Quebec. My general interest in videotex and teletext arises from these three divergent points. They converge specifically on the research I report on here.

The Research Data

Before giving the details of my research activities in preparation for my observations and conclusions, I will explain briefly what videotex and teletext are.

Both videotex and teletext present visual information on the screen of an adapted television receiver (and some other video display terminals). There is as yet no sound (2), and the images are still frames (although some simple animation is possible).

Videotex is an interactive closed-circuit system which allows the user to select, in his home, office, school or other site, a "page", i.e., a full television screen, of information stored in a central computer or computer data banks. This choice and the information chosen each flow through the switched telephone network.

Teletext is an interactive one-way transmission system broadcast as a television signal using an invisible unused portion of existing television signals, i.e., the vertical blanking interval. The "blank" referred to is easy to see if the vertical hold control on a television receiver is adjusted so that the gap between the two picture frames is visible. If a teletext signal is being carried in the vertical blanking interval, the three-line teletext information packet will be clearly visible.

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Videotex and teletext may have a common data base or separate data bases. In both cases the kinds of information available are quite varied - popular, journalistic, professional, academic, business-directed, commercial, statistical, personal, and may include confidential data accessible only to designated "closed user groups", e.g., doctors, lawyers, social workers, banks. This material is made available for transmission by what is called "information providers". Nominally, at least, any individual or organization can be an information provider.

Since my main research approach is historical, I have been using both primary and secondary sources beginning in the late 1960's, when all this began: research into the notion of a shared common visual space and the combining of three common electronic information devices: the telephone, the television receiver and the computer.

Research Activities

My research has followed standard patterns:

- interviews
- the study of documents
- literature searches

Besides Canada, my research has been carried out in Britain, France, Holland, Switzerland, the United States and West Germany, including West Berlin. I have interviewed most of the major participants involved since the beginning (and mainly still involved): scientists, technologists, technicians, ministers, deputy ministers and other public officials, academics and representatives of private industry at all levels: more than seventy subjects, many interviewed several times.

A General Impression

From these interviews I am left with the clear general impression that those concerned with videotex and teletext at the earliest period were strongly committed to a fully interactive use of these media. In particular, videotex was seen as a true person-to-person means of communication. This aspect of videotex is getting very little attention from any of its developers in any country. In other words, one of the basic possible functions of the medium has been largely ignored. This point will be referred to below. It has significance for understanding both the nature of the users of videotex and teletext and the use to which they are being put.

Documents

In my quest for original research and policy documents I have been able to see most of what I have asked for. (3)

The Literature of Videotex and Teletext

Secondary sources on videotex and teletext are plentiful. In particular, three computerized data bases - E.R.I.C., Computerindex and Pascal - are very valuable. I have about six hundred citations, in six languages, in this field.

General Applications vs. Educational Applications

Videotex '83. What has become the major annual videotex event was held in New York in

June - "Videotex '83". There were eighty-one presentations, given by speakers from the United States (the majority), Canada, Britain, Brazil, Australia, and the Commission for the European Communities. None of the presentations gave significant attention to education.

Videotex Europe. This conference takes place in November. Seventy-one presentations are announced, with speakers from Holland, West Germany, France, Britain, the United States, Denmark, Belgium, Spain, Australia, Italy, Sweden and Austria. None appears to deal in any way with education.

Countries Using Videotex and/or Teletext

Canada: Videotex: General Applications. In Canada I have found twenty-eight videotex applications. These are some of the general-purpose applications; all use Telidon, unless otherwise stated:

- National: Federal Government, "Can Tel"
  Teleglobe Canada, "Novatex"
  Telecom Canada, "iNet" service, also alpha-numeric.
- British Columbia, BCTel
- Saskatchewan, SaskTel, "Pathfinder"
- Manitoba, Manitoba Telephone System, "Project Ida", "Grassroots"
- Ontario and Quebec, Bell Canada, "Vista"
- New Brunswick, New Brunswick Telephones, "Project Mercury" (4)

Canada: Videotex: Educational Applications. I mean by an educational application one having an interface with established formal educational institutions/systems. A Federal Government Telidon official reports that twenty-one colleges and universities in Canada are using or researching Telidon technology (5). I have not been able to uncover all twenty-one, but here are some of them.

- The Electrical Engineering Division of the National Research Council of Canada: Telidon and "Natal", the high-level National Authoring Language.
- The Children's Hospital of Eastern Ontario and the Faculty of Medicine, University of Ottawa: videotex for health care.
- Systemhouse, Ltd., Ottawa: Videotex (along with other media) for the management of education.
- The Open Learning Institute, Richmond, B.C., Division of Educational Technology: Telidon in the context of distance education.
- Alphatel Systems, Edmonton: Telidon and microcomputers (6).

The Department of Communications has reported on education and Telidon (7). It describes these projects.

- The University of Calgary: linking Telidon with the University's teleconferencing system using the telephone: "Teaching Grammar in an Integrated Language Arts Program".
- The Alberta Correspondence School, in co-operation with Alberta Government Telephones and the Alberta Educational Communications Authority, is teaching and servicing a Grade 12 "Mechanics of Machines" course using Telidon.

- The Educational Research Institute of British Columbia has published Learning at a Distance and the New Technology. (1983) It outlines the use of videotex, among other media, as a communication link for isolated homes and classrooms.
- In the Autumn, 1981, term a Burlington, Ontario, high school taught Grade 9 mathematics using Telidon as a computer-assisted learning device.
- The University of Waterloo, Ontario, has used Telidon for on-campus course and program information, and is also assessing its potential as a supplement to correspondence courses.
- In British Columbia, the Adaptive Testing Network is researching the use of videotex for administering the written portion of the automobile driver's test.
- At Quebec's Téléuniversité, the "Plato" computer-based education system is being used in a videotex mode.
- At the Université de Québec à Montréal, the Communications Department is using Telidon and the "Plato" system for teaching visual communication.
- In Winnipeg, the Genesis Research Corporation, one of Canada's largest electronic publishers of children's stories, delivers these stories in the Telidon format on cable to subscribers. The text on the screen accompanying the graphics is designed to be read to the children by their parents (or by the baby-sitter, perhaps?).
- At the Ontario Institute for Studies in Education, a terminal-independent Telidon-based system has been developed using the "Can-8" language. (8)
- At the University of Victoria, British Columbia, David Godfrey leads a group which is developing computer-assisted learning courses with Telidon. (9)
- Athabasca University in Alberta has made a Telidon system operational as part of the distance education role of the university.
- Finally in educational videotex, the Ontario Educational Communications Authority's TVOntario has done much valuable work, including participating in the "Vista" field trial of Telidon and the production of a 10,000 page "Student Guidance Information Service" for students and guidance counsellors.

In my assessment, the range of videotex (and teletext) work carried out by TVOntario, and its documentation, is of very high quality, and I recommend it as an excellent place to begine a study of this topic. (10)

Videotex in Canada: A Summary

The absolute number of videotex applications in Canada is second in the world only to the United States. Educational applications are higher proportionately in Canada than in any other country. At the same time the question must be asked about Canada's lead in videotex and education - the question that applies to Telidon itself: will we be able to capitalize on our trials and our research, and capture a market for as many aspects of Telidon as possible?

Teletext in Canada

This is a very simple situation. There are two applications, both using Telidon. One is general: "Project Iris", the Canadian Broadcasting Corporation's field trial (11). The other is educational, run by TVOntario (12).

Other Canadian Videotex and Teletext Activities

These instances of related research deserve to be mentioned.

UNESCO. Canada is participating in UNESCO's European Joint Studies in the field of education. Three studies are being carried out between 1982 and 1985: one is New Technologies in Information and Communications and Their Impact on Education. TVOntario is the lead agency for the first year of the study, which includes videotex and teletext. (13) Another of the studies is The Use of the Micro-Computer in the Teaching-Learning Process. (14)

TVOntario. At TVOntario, the office of Development Research is preparing eighteen working papers on New Technologies in Education in Canada. In particular, Paper No. 11, "Educational Applications of Videotex/Telidon in Canada" seems promising. (15)

University of Regina. A federally-funded research project. An Analysis of Microcomputer Use in Canadian Educational Institutes, is beginning this year in the Department of Computer Science of the University of Regina. I refer to it in case it may deal with my topic, and because of its general applicability to the interests of those attending this symposium.

Intensive Canadian Coverage: A Rationale

I will deal with videotex and teletext in other countries, but I have given most of my attention so far to Canada because:

- Telidon is a technology both unique and Canadian.
- its applications have been plentiful, both in Canada and abroad
- primarily because eighteen of twenty-eight examples of videotex or teletext in Canada have been educational. This is absolutely and proportionately more than any other country in the world. The significance of these numbers is this: any international empirical study of videotex and teletext in teaching and learning would have to be based substantially on what has happened in Canada since Telidon first appeared, just over five years ago.

International Data (17)

Because of obvious presentational limitations I will deal with the international aspect in summary form. In this part of my survey I have not differentiated between 1) the earlier alpha-mosaic systems: Britain's videotex - "Prestel" - and teletext - "Ceefax"/BBC and "Oracle"/IBA; France's videotex and teletext - "Antiope" - and videotex - "Télétel"; the new CEPT (16) standard with West Germany as godfather. 2) the later alpha-geometric system from Canada - Telidon - and its enhanced version - the North American Presentation Level Protocol System (NAPLPS), adopted by AT&T.

The United States

Applications		Educational
Videotex:	25	5
Teletext:	15	3
Total:	40	8

Britain

The situation in Britain is very striking, especially in comparison to the United States. (18)

Applications		Educational
Videotex:	6	6
Teletext:	2	2
Total:	8	8

i.e., all applications have a significant amount of educational content.

France

Applications (19)		Educational (20)
Videotex:	36	2
Teletext:	1	0
Total:	37	2

West Germany

West Germany has two applications each of videotex and teletext, with no educational applications.

The rest of the world is easily dealt with. These countries have both videotex and teletext: Australia, Belgium, Denmark, Finland, Holland, Hungary, Japan, Sweden, Switzerland. These countries have only videotex: Austria, Brazil, Czechoslovakia, Greece, Hong Kong, Italy, South Africa, Spain, the U.S.S.R., Venezuela. Norway is the only country with teletext alone. None of these twenty countries, with about thirty-five applications (21), makes any educational use of videotex or teletext.

The World Total

In general terms (since my sources are mixed over time), there are 154 videotex and teletext applications of which thirty-six - less than a quarter - are educational to some significant degree.

The Interface with Education

From these figures it is clear that videotex and teletext are not, or not yet, major instructional media. But, according to Bowers and Cioni, they have educational potential. Discussing Telidon in particular, they say, "Hypothetically at least Telidon could be as ubiquitous as television sets or telephones. It has, therefore, the potential of delivering educational experiences to anyone regardless of location or time.

"Telidon's interactive capability allows each learner to proceed at his own pace with periodic feedback on progress.

"Its graphics capability enables the provision of a wide range of educational subjects including, for example:

- music scores
- charts and graphs ...
- symbols, equations ...
- cartoons - political science
- maps - meteorology, geography

"The ability to provide pages that unfold at a controlled rate, focuses attention and paces the learning experience.

"The educational effectiveness of real live data must be noted. Information such as weather, economic reports, stock markets, news is considered very useful." (22)

Additional insight into educational applications comes from John Tydeman, formerly Director of the Institute for the Future. He lists these seven examples: course listings, computer-assisted/computer-managed instruction, special services for home-bound students, supplemental materials for education TV programs, do-it-yourself training, literacy and retraining, and discusses the information providers and users (23).

Tydeman also talks about the second-order transformative effects of the new media. "Retraining the Trainers. In the information- and data-rich environment of 1998, there are numerous electronic resources available to the student and teacher for the learning process. As a result, the traditional role of the teacher has been transformed. Rote learning is greatly facilitated by numerous interactive systems accessible at school, home and work. The teacher's role in this environment is to help young learners synthesize data and develop creative problem-solving skills. The best teachers have always seen themselves in this role, but the 'best' are far from 'all'. Retraining is a possibility, but the bureaucracy of education is big enough and powerful enough that many may resist. This resistance is likely to be politicized. In fact, the back-to-basics movement may be the first stage of this resistance." (24)

A major United States Congressional technology assessment deals with this whole realm under consideration and merits the attention of anyone wishing a complete review of the field. (25)

If the technology is changing the teacher, it is also attracting business. At present videotex and teletext are used primarily as marketing and advertising media. Included in this mix is the selling of educational services. Hans Diemer of Camosun College, Victoria, B.C., put it this way.

"Private industry is rapidly customizing communications technology to educational needs at hardware and software levels. The potential loss of their mandates by educational institutions can only be avoided if educators are more open to change and become more directly involved in the continual development of new courseware. The learning environment requires alterations and facilitators must assume roles of responsibility in the emerging information society." (26) He continues, "...as sincere educators we cannot allow private industry to encroach on our courseware mandate, unless we agree that education does not lie at the root of a free and prosperous society." (27)

Conclusion

Videotex and teletext systems are steadily, if slowly, coming into general use for commercial purposes. Education is not keeping pace with business in their use. To paraphrase the late Marshall McLuhan, what will you do when a chip learns your job?

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References

(1) Telidon is the Candian alpha-geometric videotex and teletext system and protocols developed at the Communications Research Centre of the Canadian Department of Communications.

(2) The developments in the Austrian "Mupid" system are worth attention on this sound aspect of videotex and teletext.

(3) In particular, the Department of Communications in Ottawa has been outstanding in providing access to documents and research facilities.

(4) For a full review of current Canadian Telidon applications, v. Feeley, James, Telidon Trials and Operations - Results, Experiences, and Future Trends, presented at Videotex '83, New York, June 1983. (Feeley was at that time Director-General, Informatics Management Programs, Department of Communications. The paper is available on request: Journal Tower South, 17th Floor, 300 Slater Street, Ottawa, Ontario, K1A 0C8)

(5) Feeley, op. cit.

(6) These five applications are all discussed in these Proceedings, as are two from Britain and one from France.

(7) Department of Communications, Information Services Division, Telidon Reports, No. 10, March, 1983, "Telidon and Education". (This occasional publication is available on request from Room 1718, Journal Tower South, 365 Laurier Avenue West, Ottawa, K1A 0C8)

(8) "C. A. N." stands for "Completely Arbitrary Name" V. also Dr. Robert S. McLean in these Proceedings

(9) V. Godfrey et al. in these Proceedings; Godfrey, D., and E. Chang, Editors, The Telidon Book, Toronto and Victoria: Press Porcépic, Ltd., 1981; Godfrey, D., and S. Sterling, The Elements of C.A.L., Toronto and Victoria, Press Porcépic, Ltd., 1982

(10) C.f., Syrett, J. H., "Implications of Videotex for Education", October, 1981; Bowers, P. G., and M. Cioni, Telidon and Education in Canada, N. D. (paper given at "Viewdata '80", London, England?)

(11) In Calgary, Montreal and Toronto

(12) V. citations in no. 10, above

(13) In charge is Dr. Ignacy Waniewicz of the Office of Development Research

(14) V. Report of the Secretary-General, 1982-83, Occasional Paper No. 43, Ottawa: Canadian Commission for UNESCO, August, 1983, p.5

(15) The first twelve papers are due at the end of January, 1984.

(16) European Community of Posts and Telecommunications

(17) This section relies heavily on the only available international review of this

field, 1982-1983 Videotex Directory: A Guide to the Videotex/Teletext Industries, Menlo Park, California: The Institute for the Future; Washington, D.C.: Arlen Communications, Inc., 1982

(18) For additional information, V. Real, Michael R., Videotex and Education: A Review of British Developments, ERIC: ED 210 718, 1981; Thompson, Vincent, "Videotex in Education", in Media in Education and Development, 15, 3, September, 1982, pp. 118-120

(19) "French Videotex: Full Speed Ahead!", in Telecom France, No. 3, June, 1982, pp. 17-28

(20) This situation was confirmed orally by Dr. Bernard Dubreuil, Institut National de Recherche Pédagogique, Montrouge, France, at this Symposium, 1983 10 19

(21) The total is not exact because of uncertainty about activities in the U.S.S.R.

(22) Bowers and Cioni, op. cit., p. 13

(23) Tydeman, John, et al., Teletext and Videotex in the United States, New York: McGraw-Hill Publications Co., Data Communications, 1982, p. 66

(24) Tydeman, op. cit., p. 258

(25) U. S. Congress Office of Technology Assessment, Informational Technology and Its Impact on American Education, Washington, D.C.: U.S. Government Printing Office, November, 1982, Stock No. GPO 052 - 003 - 00888 - 2

(26) Diemer, Jans, "Aut Vincere Aut Mori", in 1982 Conference Proceedings, Association for the Development of Computer-Based Instructional Systems, p. 1

(27) Diemer, op. cit., p. 3

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